

### **REMARKS**

The Office Action dated February 25, 2009 has been carefully considered. Claims 1, 3, 4, 7-9, 11, 34, and 36 are pending in the present application, with claims 1, and 36 being the independent claims. Claims 1 has been amended. These amendments add no new matter. For example, Applicants herein amend claim 1, so that claim 1 recites, in part, "wherein the reaction layer includes a porous material that permits the shrunk cell components to permeate so that the reaction layer has a mixed state that comprises the liquid specimen mixed with at least the shrunk cell components, the analyte, and the reagent." Examples of the reaction layer, the liquid specimen, and the mixed state are illustrated and described in the specification of the present application, for example, at least in Figs. 1 and 2, and paragraphs [0094]-[0102], with particular reference to paragraph [0094], [0095], and [0102].

Applicants respectfully request reconsideration of the application in view of the foregoing amendments to the claims, and the remarks that follow below.

Independent claims 1 and 36 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,939,331 to Burd et al. ("Burd") in view of U.S. Patent No. 5,166,051 to Killeen et al. ("Killeen"). Applicants respectfully traverse. More particularly, and as discussed in more detail below, Applicants respectfully submit that the amended claim 1 is patentable over the proposed combination of Burd and Killeen because the proposed combination does not disclose, teach, or suggest at least "a reaction layer . . . [that] includes a porous material that permits the shrunk cell components to penetrate the reaction layer in a manner that forms a mixed state that comprises the liquid specimen mixed with at least the shrunk cell components, the analyte, and the reagent." (emphasis added).

Applicants maintain that to determine obviousness under 35 U.S.C. § 103(a), "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct 1727 (2007). Moreover, in order to successfully maintain a "prima facie" obviousness rejection under the Statute, each and every essentially claimed feature must be found in or suggested

by the cited prior art, whether singly or in combination. And, as to combinations of references such as the combination suggested in the Office Action, there should be a reason found in the prior art to combine the references in the manner proffered by the Office Action.

In contrast to the pending claims, Burd illustrates and describes a device for detecting an analyte in a whole blood sample. (See, Burd's Abstract). This device includes a test strip 13 with a sample zone 23 and a label zone 26, both of which may contain "a reagent capable of binding red blood cells." (See, e.g., Burd at col. 8, lines 14-16; and col. 9, lines 57-67). The test strip 13 also includes a capture zone 69, which is configured to detect the presence and amount of the analyte. (See, Burd at col. 8, lines 59-63). Nowhere does Burd disclose, teach, or suggest, however, that the material of the capture zone 69 is of the type that permits the blood cells to permeate into the capture zone 69, let alone that the material permits the shrunken cells to penetrate with the liquid portion of the test sample. Burd is, in fact, silent as to the construction of the capture zone 69, other than its position within the nitrocellulose section 27. (See, Burd at col. 8, lines 59-60).

Killeen does not cure the deficiencies of Burd, even though Killeen is also directed to a device for chemically determining whole blood analytes. (See, Killeen's Abstract). Killeen's device includes a support 10 with a detection zone 14 and an overlay membrane 16 that covers the detection zone 14. (See, e.g., Killeen at Fig. 1; and col. 9, lines 27-47). The overlay membrane 16 of Killeen comprises a porous membrane that contains a crenating agent that shrinks red blood cells ("RBC") in the whole blood. (See, e.g., Killeen at col. 5, lines 5-8). However, there is nothing in Killeen that discloses, teaches, or suggests that the detection zone 14 is constructed of materials that permit the shrunken RBCs to penetrate with the liquid portion of the test sample into the detection zone 14.

The Office Action nonetheless combines Burd and Killeen to reject the pending claims on the ground that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to include with the device of Burd et al. a cell shrinking reagent within the sample addition matrix as taught by Killeen et al." (See the Office Action at page 4). However, not only does the proposed combination simply not

disclose, teach, or suggest all of the limitations of the amended claim 1, but also Applicants respectfully assert that both Burd, and Killeen *teach away* from “a reaction layer [that] includes a porous material that permits the shrunk cell components to penetrate the reaction layer” because both Burd, and Killeen are directed to devices that separate the solid elements (e.g., blood cells) from the liquid before the sample penetrates the reactive portion of the device. Thus, there would be no motivation to combine Burd and Killeen in any manner that would “result in the biosensor device of Burd et al. including the crenating agent of Killeen et al.” as alleged by the Office Action for the following reasons.

First, Applicants respectfully point out that a problem addressed by embodiments of the invention that is recited in amended claim 1 is how to provide a biosensor that does not “clog” even though the cell components (e.g., red blood cells) are not separated from the test sample as the test sample permeates chromatographically downstream into the area of analysis. Although pertinent to the claims of the present application, Applicants believe that the Office Action does not recognize this problem because the Office Action indicates that the combination of Burd and Killeen “shrinks and rigidifies the cells, making them less flexible and less able to penetrate into the pores of the detection zone membrane.” (See, the Office Action at page 4 (emphasis added)). Since the combination of Burd and Killeen make the cells “less able to penetrate,” Applicants assert that it is unlikely that a skilled artisan would look to either Burd or Killeen because both Burd and Killeen *teach away* from a device that maintain the continuity of the test sample as it permeates through the device to the area of analysis.

Second, the device of Burd is constructed specifically so that “[t]he red blood cells are thus retained on the sample pad and the RBC-free fluid remaining flows into the remainder of the device.” (See, Burd at col. 9, lines 59-62). Killeen’s test device, on the other hand, shrinks the blood cells with the creating agent, and specifies the materials of its detection membrane so that “the stiffer, less flexible cells cannot move easily into the pores [of the detection membrane] and are trapped at the surface of the detection membrane.” (See, Killeen at col. 5, lines 41-44). Therefore, there would be no reason, advantage, or motivation to combine the crenating agent of Killeen’s overlay

membrane (which permits the shrunken RBCs to pass to the detection membrane), with the device of Burd that retains the RBCs on the sample pad, to form a mixed state with the shrunken RBCs and the liquid portion of the test sample. Furthermore, as previously stated, Burd and Killeen *teach away* from such a modification by focusing on separating the shrunken RBCs from the test sample at a part of the test device upstream of the area of analysis.

Third, and in connection with the discussion immediately above, Applicants respectfully submit that it is likely that the modification of Burd with the crenating agent of Killeen renders the device of Burd unsuitable for its intended purpose. That is, Burd's device is constructed so that the RBCs in the test sample are retained on the sample pad, and so that the RBCs do not permeate to the other portions of the device. Killeen's crenating agent is particularly suited, however, to cause the RBCs to shrink to a size that permits the RBCs to permeate through the overlay membrane so that the RBCs are trapped on the surface of the detection membrane. Therefore, it follows that the use of Killeen's crenating agent in the sample pad of Burd will prevent Burd from retaining the shrunken RBCs on the sample pad because the size of the shrunken RBCs will not be compatible with the sample pad of Burd's device.

Independent claim 36 recites, in part, "a reaction layer . . . wherein the shrunk cell components of said liquid specimen permeate together with the liquid specimen into said reaction layer in a mixed state . . ." Based on the discussion of amended claim 1 above, it logically follows that the claim 36 is also patentable over the combination of Burd and Killeen because Burd fails to disclose, teach, or suggest the reaction layer that permits the shrunk cell components and liquid specimen to permeate together, and each actually teaches away from the mixed state by focusing on separating the RBCs from the test sample prior to the reaction layer. Likewise, Killeen does not add anything to Burd with respect to the limitations that are recited in the claim 36. Thus, the claim 36 is further distinguished over any combination of Burd and Killeen.

Because essential limitations in the claims of the present application are not found in or are suggested by the cited references, whether alone or in combination, there cannot be a successfully maintained obviousness rejection under the Statute. If the present obviousness rejection of independent claims 1, and 36 over the proposed

combinations of Burd and Killeen are maintained, Applicants respectfully request that the United States Patent and Trademark Office (USPTO) point out with specificity the teachings related to all of the limitations of independent claims 1, and 36, and to provide reasons that combining the relied upon references was a design step well within the grasp of a person of having ordinary skill in the relevant art. (See, *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct 1727 (2007)).

For at least these reasons, independent claims 1, and 36 are distinguished over any combination of Burd and Killeen and the other cited references, as are the claims that depend therefrom. Favorable reconsideration and withdrawal of the present rejection is respectfully requested.

Regarding the claims discussed herein, Applicants' selective treatment and emphasis of independent claims 1, and 36 of the present application should not be taken as an indication that Applicants believe that the rejection of the dependent claims are otherwise sufficient. Applicants expressly reserve the right to present arguments traversing the propriety of the dependent claim rejections later in the prosecution of this or another application.

Dependent claims 3, 4, 7-9, 11, and 34 are believed to be in condition for allowance not only by reason of their dependencies from an allowable base claim, but for their recitation of additional combinations of elements. Therefore, withdrawal of the rejection of claims 3, 4, 7-9, 11, and 34 and favorable reconsideration is respectfully requested.

Applicants believe that all of the pending claims have been addressed. Failure to address a specific rejection, issue or comment in the present file history does not, however, signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made in the present file history are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Moreover, nothing in the present file history should be construed as Applicants' intent to concede any issue with regard to any claim, except as specifically stated, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

While Applicants herein may have highlighted a particular claim element of a claim for purposes of demonstrating an insufficiency in the Office Action, Applicants' highlighting of a particular claim element for such purpose should not be taken to indicate that Applicants have advanced the argument that a particular claim element constitutes the sole basis for patentability out of the context of the various combinations of elements of the claim or claims in which it is present.

Accordingly, in view of the foregoing remarks, Applicants believe all of the claims of the present application to be in condition for allowance and respectfully request passage to allowance of the application. If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' representative at the phone number listed below.

Favorable action is respectfully requested.

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Respectfully submitted,

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